Bulgarian Electricity Generating Plants

SUMMARY

Bulgaria is the largest electricity producer among the South East European countries and a net exporter of electricity. The maintenance of the power generating systems has deteriorated over the past years and some generating units have ceased operation. Much of the equipment in generation, transmission and distribution systems is outdated and extremely inefficient.

Rehabilitation and renovation of the electricity generating capacities have become a priority task for the government of Bulgaria. In 2002 the Council of Ministers accepted an Energy Strategy for the development of a competitive energy market and later was adopted by the National Assembly. This strategy reflects the changes in the following aspects: transformation of the energy sector into a part of dynamically integrating energy market, increase of the Bulgaria's energy competitiveness on the regional Balkan market, as well as the regulatory body takes its dominating position among the energy institutions. The overall energy policy includes: demonopolisation and deregulation, privatization and incorporation of energy enterprises, and a significant ten-year plan for the reconstruction and development of energy generating and transmission capacities of the country with estimated cost of over $7.4 billion. It is important to note that all receipts from privatization of energy enterprises will be reinvested into the sector.

This report describes power-generating industry of Bulgaria, its structure and further development perspectives.

A. MARKET HIGHLIGHTS & BEST PROSPECTS

The following section describes the general situation of the Bulgaria power-generating industry, a privatization plan, the government policy on industry reconstruction and development and its influence on prospective involvement of foreign contractors and suppliers, procurement regulations and statistical data.

I. Market Profile

Bulgaria is part of the United Energy System of Europe. The available installed capacity of the country in 2003 was 9,515 MW. Bulgaria had a total installed generation capacity of 12,331 MW, consisting of thermal power plants – 6613MW (53.6%), nuclear plant – 2880 MW (23.4%), hydro-power plants –1974 MW (16%) and pumped-storage hydro power plant – 864 MW (7%). The available capacity of the existing power generating sources is considerably lower than the installed capacity. For the period 1990-2003 the electric power demand varied with an upward trend observed in the country after 1998. Industry was the major

consumer with relative share of 56% in the net electricity demand in 2003 and it showed a trend of growth. A downtrend is observed in the household consumption in the recent years. Last year the relative share of nuclear power plant in the total net electricity output was 41.9%. The share of thermal power plants is 49.6% and that of hydro power stations is 8.5%. There is one nuclear power plant in Kozloduy. The most significant coal-powered facilities are 2,940 MW Maritsa East 1, 2 and 3 power plants in the vicinity of the Maritsa East mines.
In 2004 Bulgaria produced 41,586 GWh of electricity. About 5,449 GWh of electricity were exported to the neighboring countries (Macedonia, Albania, Romania, Moldova, Greece, Serbia, Kosovo). For decades, it has been very common for Bulgaria to export electricity to Turkey and Greece for hard currency. Bulgaria is a member of the Union for Coordination for Transition of Electricity (UCTE), which allowed the electric systems of Romania and Bulgaria to be fully integrated into the largest synchronously operating power system of Europe. Approximately 450 million people in Europe take advantage from the high reliability and the security standards of such a wide synchronously linked power grid.

Most of the equipment for power generation in Bulgaria was produced in Russia, other parts of the former Soviet Union and by Soviet trading partners in Central and Eastern Europe. The physical condition of the thermo and hydro power plants, as well as the district heating utilities have deteriorated to an extent that makes it difficult to maintain reliable operation and develop a responsive regional wholesale power market without significant investment to rehabilitate the infrastructure. The current technical state is inadequate for modern metering and measuring, telecommunications, instrumentation and frequency control, information systems and management, and supervisory control and data acquisition.

The facilities require rehabilitation with more efficient and environment-friendly equipment, so that they can operate at their design capacities. There are currently no manufacturing facilities in the country for the production of equipment used in power generation and transmission.

- Government Policy

The Rehabilitation Program of power plants is drawn up taking into consideration the Program for application of Directive 2001/80/EC. The rehabilitation of power plants aims at reconditioning of the thermo-mechanical equipment, erection of flue gas desulphurization plants and implementation of other measures for reduction of noxious emissions. The resulting effect may be increase of gross output of the rehabilitated units and reduction of specific fuel consumption.
The new program for reconstruction and development of energy generating capacities creates additional opportunities for foreign firms in Bulgaria. Accordingly, the market of this natural resources poor country has significant

potential for the U.S. firms with the advanced business experience in the energy sector industries. The best prospects list of U.S. equipment needed in Bulgaria consists of steam generating boilers; central heat boilers, auxiliary plant used with boilers, condensers steam turbines and other vapor turbines, gas turbines, valves, pumps for liquids, parts of electric motors, generators, sets, electric generating sets and rotary converters, electric motors and generators.

Free trade in electricity became possible with the adoption of the energy law in November 2003. However, in practical terms it started in September 2004 when the first agreement for the delivery of freely contracted electricity prices was signed between Umicor and the Kozloduy NPP. Currently, the deregulated energy market accounts for only 8.0 pct of the end-consumption in the country, with USD6.6 million worth of electricity sold monthly. According to the SERC-adopted timetable, up to 19 pct of the energy market had to be liberalized as early as the middle of 2004, and by June 30, 2005 up to 22 pct.

The monopoly of national electricity grid operator NETC over the transmission of power, including exports, will expire upon Bulgaria's accession to the EU. NETC is obliged by law to spin off into separate companies its transmission and power trade operations no later than the date of Bulgaria's EU accession. The company already books the two activities separately and plans to implement the legal separation by the end of 2005.

Growing demand for electric energy and depreciation of the existing power generating facilities in the country and the region motivated the Bulgarian government to develop a long-term program for reconstruction and development of the sector for 2001-2010. The development of the power sector will be based on maximum utilization of indigenous energy resources. This includes the use of lignite through rehabilitation of the existing generating capacities and construction of new ones:

- The program provides a lifetime extenuation for the existing power generating capacities (7,100 MW) and capacity increase for the existing heat power plants by 905 MW.
- The program also includes introduction of new generating capacities for 1,748 MW, transformer capacities on 2,429 MVA and installation of 1,355 km of 220-500 kV power transmission lines. The capital assets of the power generation industry shall be renewed for 15 per cent. Detailed description of the program is below.
- Large involvement of international consultants, contractors and equipment suppliers are needed for the implementation of the above-mentioned programs. Generally, in accordance with Bulgarian legislation, the contractors or suppliers shall be selected through open tender process. However, the government would prefer a bidder, which offers investments, loans or any other attractive financing sources for the relevant project.
- The Plan for Reconstruction and Development of Energy Generating capacities outlines the development, the projects and investments in the sector

till 2010. The plan was prepared by the Ministry of Power Energy and includes technical re-equipment and modernization of energy facilities, reconstruction and further development of the power transmission networks and construction of new power generating capacities. The realization of this plan will be possible if the required investments of approximately Euro 8 billion are secured. In accordance with the plan, the amount of USD960 million is earmarked for the improvement of the safety and security of Kozloduy NPP; USD730 million is needed for refurbishment and modernization of existing thermal power plants; USD 1 billion is required to further develop the power transmission and distribution system. The remaining funds are needed for construction of new generating capacities – Maritsa East 1 and Belene nuclear plant.

- Subsidies for both electricity and heating would be phased out by 2006. The country is refurbishing its thermal power generation plants with an aim to reduce its dependence on oil, gas and coal imports from Russia and Ukraine.
- Bulgaria covers 40-50 percent of southeast Europe's entire electricity deficit every winter. It exports electricity to Romania, Macedonia, Kosovo, Italy and Greece.

II. Statistical Data 2004

Available capacity: at TPP	5015 MW (52.7%)
- of which fired with local fuels	2365MW (24.9%)
- fired with imported fuels	2650 MW (27.8%)
- at Nuclear PP	2700MW (28.4%)
at Hydro PP and PSHPP	1800 MW (18.9%)
Total:	9515 MW
Electricity export - 6 billion KWh	

B. COMPETITIVE ANALYSIS

Domestic Production

Most of the equipment for the power industry was produced in Russia, other parts of the former Soviet Union and by Soviet trading partners in Central and Eastern Europe. There are only limited specifications of power equipment that have been produced in Bulgaria.
As of 2002, leading exporters of electrical power equipment to Bulgaria were Germany and Russia. More than 40 percent of Bulgaria's power generation assets are managed by European strategic investors. As direct investors, these companies receive incentives that make importing equipment less troublesome. Political and commercial risk will challenge businesses well into the year 2005, so most should consider medium-to-long-term strategies for their activities in Bulgaria.

U.S.Market Position

U.S. companies have been involved directly in the reconstruction and development projects in the power generating industry of Bulgaria. There are records of direct imports from U.S. in the power sector. Companies that actively participate in the energy industry reconstruction program are Entergy, AES, Solar Turbines, Emerson, Montgomery Watson Harza, Black&Veatch, Westinghouse, Honeywell, Parsons E&C.

C. END-USER ANALYSIS

The program for building new generating capacities in Bulgaria is based on the following:

- The established energy policy and strategy of the GOB;
- Need for baseload generating capacities;
- The existing technologies and sources of electric power;
- The proposed technologies shall meet the environmental protection requirements;
- Maximum utilization of the water potential and other renewable sources;
- Opportunity to operate the existing infrastructure
- Personnel and research potential for operation of nuclear technology.

The period 2007-2010 is critical to the Bulgarian EPS. That is the period after possible decommissioning of Kozloduy NPP units 3&4 before commissioning of new nuclear unit. About 1700MW of new capacities shall be built within that period. The basic scenario of the developed least-cost plan envisages the following milestones of commissioning the new capacities: Maritsa East 1- 600 MW TPP, lignite –fired in 2008, Tsankov Kamak- 80MW HPP in 2009 and Belene NPP-1000 MW in 2010.
In order to preserve the level of electric power supply security, timely measures shall be introduced:

- to increase the share of electricity output from renewable energy sources in the national energy balance through application of preferential policy for their development;
- to rehabilitate the large TPPs that will continue operation till 2010;
- to preserve the share of the nuclear energy in the overall energy balance of the country through construction of new capacity;
- to increase the share of the sources for combined generation of electric and heat energy;
- to reduce losses in the power transmission and distribution networks,
- to gasify households in order to replace the electric power consumption, fuel oil, and coal for heating.

If Bulgaria manages to rehabilitate its capacities soon and completes its investment program in the electric power sector, it will gain very good positions in the regional energy market with expected deficiency after 2010.

Privatization

The overall success of the privatization and the reform in the Bulgarian energy sector started with a new strategy, passed back in 2002, a new direction of the sector's price policy, a new Energy Act and other legislature. The excellent deals with the sell-off of the seven local electricity distributors were very good sign, as the investors could assess the potential of the country and the quality of the reforms within the sector.

There are already several projects with the involvement of foreign contractors or equipment suppliers in the energy sector, such as modernization of TPP Maritsa East 3 (EUR600 million), modernization of units 5 & 6 of NPP Kozloduy (EUR491 million), construction of 80 MW hydro power plant Tzankov Kamak (EUR220 million), rehabilitation of district heating utilities (over EUR130 million), development of renewable sources (EUR35 million), HPP rehabilitation (EUR 30.5 million). Bulgaria has been extended more than EUR 200 million in credits to carry out energy efficiency and energy saving projects.

Adhering to EU standards, Bulgaria expects to fully liberalize its power market by 2007, most notably by privatizing NEK after 2007. Privatization will allow all consumers to purchase electricity supplies directly from the producers. In September 2004, Bulgaria's Privatization Agency (PA) completed the sale of 67 percent of the country's electricity distribution companies. In May 2005, the PA successfully sold Varna and Rousse power plants to RAO EES of Russia.

International consultants and financial advisers are heavily involved in to the privatization process for evaluation of the assets, pre-marketing and sales conducting assignments. The Government is expecting that privatization of the majority of the power units to be completed by the end of 2007. The Government is not reluctant to offer a management control of the utilities and power units.

D. MARKET ACCESS

The Government of Bulgaria generally welcomes joint-venture initiatives. This form of doing business in Bulgaria can allow the foreign company to have a range of preferences, such as exclusivity, tax incentives and other benefits. In some cases local joint venture partners depend on their foreign partners to shoulder the majority of capital investment (because they often have little working capital and face high interest rates from local banks). However, large investment projects, approved and guaranteed by the government, create great opportunities for the export of machinery, equipment, parts, materials, consumables as well as a technical assistance. Currently all prices are regulated in the sector. Three tariff methodologies (for gas, electricity and district heating) have been offered by SERC and approved by the Council of Ministers.

Despite the fact that Bulgaria's firms have very limited purchasing power, they are very open to U.S. goods and services. Two key mitigating factors, however, are the unfavorable customs duties and tariffs for the U.S. goods and services and the need for the U.S. supplier to finance even the smallest transaction. Some concerns of the American power companies, entering into the country, are focused on the underdeveloped level of telecommunications, and transportation networks and the lack of operating capital of the local companies that hinders the process of direct ordering.

Potential contractors offer the government financing sources for a specific project, such as long-term loan with attractive terms and conditions. Exim banks, commercial banks, IFIs or other export promoting financial institutions could provide such loans, covered by the Government L/G.

International Financial Institutions actively supports the projects in the energy sector of Bulgaria. The EBRD has allocated a loan of Euro157.5 million for construction of the new 600 MW capacities at Maritsa East 1 by AES Corp. So far the World Bank has committed around USD100 million as loans in the Bulgarian power sector.
U.S. companies and individuals interested in learning more about the Bulgarian electricity generating plants and the power sector in general are encouraged to contact CS Sofia. The Commercial Service offers a wide range of advisory services and logistical support to assist U.S. companies to enter this emerging market. For additional information about how CS Sofia can help your business, or for answers to specific questions regarding the energy sector, please direct inquiries to:

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